

## Brain Links and Brain regions

### Frontal Lobe

- Movement facilitates cognition
- Exercise boosts brain function

### Prefrontal Cortex

- When more of the senses are involved it anchors learning to increase the executive function of the prefrontal cortex

### Temporal Lobe

- Practice in hearing a steady beat and keeping a steady beat (beat awareness and beat competency) develops the language areas of the brain for receptive and expressive language and develops the internal dialogue that is necessary to sound out words.
- The brain is hard wired for rhyme, rhythm, movement and emotion.
- Elaborative rehearsal applies content to familiar songs or rhymes.

### Occipital Lobe

- Vision trumps all other senses

### Parietal Lobe

- Moving the body in space (spatial awareness) helps the brain see letters and numbers on a page
- Movement engages mirror neurons for imitation

### Cerebellum

- Reinforcement of the basic motor movements lays the framework for learning: crawling/walking, jumping and rolling
- Using repetitive gross motor movement aids the brain in putting patterns into a sequence
- The cerebellum initiates putting patterns into a sequence
- The brain seeks patterns
- Embodied cognition uses gestures, actions and motion to help understand a concept
- What makes this move is also what makes us think

### Brain Stem

- Engaging static and dynamic balance puts the brain and body into focus and attention

### Limbic system

- Movement promotes emotional safety through positive social feedback with partners and groups
- Physical activity and exercise reduces stress naturally and acts as an anti-depressant
- Physical activity and exercise regulates mood and behavior by naturally balancing neurotransmitters
- Physical activity and exercise accelerates motivation, increases self-esteem, and promotes cooperation and communication skills.

- We have a social brain
- Exercise puts the brain and body back into balance to improve mood and behavior.
- Exercise balances neurotransmitters that improve self-control, self-management and self-awareness.
- The brain is hard wired for novelty, challenge and physical activity.

### **Amygdala**

- Emotions drive attention, which drives learning

### **Hippocampus**

- Exercise grows new brain cells (neurogenesis) in the learning and memory center (hippocampus) of the brain.

### **Hypothalamus**

- Exercise increases homeostasis

### **Thalamus**

- Exercise boosts brain function and efficiency

### **Basal Ganglia**

- Motion and emotion are connected

### **Corpus Callosum**

- Crossing the midlines of the brain and body aids in coordination of movements and thoughts by organizing, integrating and energizing the brain's hemispheres

### **Motor cortex**

- Moving the body in space increases focus and attention

### **Brain Health**

- Exercise gets the brain's fuel, oxygen and glucose to the brain faster
- Exercise activates BDNF, the Miracle Gro™ for the brain that nourishes and protects the neural pathways for learning
- The brain is only as healthy as the body that carries it
- Healthy active kids make better learners
- Exercise benefits the brain first
- We are made to move
- The positive benefits of physical activity lasts for 15-20 minutes depending on the person.
- Play develops the early brain